SSI
Spatial Sciences Institute

The Remote Sensing & Photogrammetry Commission of the Spatial Sciences Institute

The 12th Australasian Remote Sensing and Photogrammetry Conference

Fremantle • Western Australia
18–22 October 2004

To Measure is to Manage

Using remote sensing and photogrammetric measurements in exploration and natural resource management

For more information please visit
www.rss.dola.wa.gov.au/12arspc or contact **ACTS Conferencing Pty Ltd**
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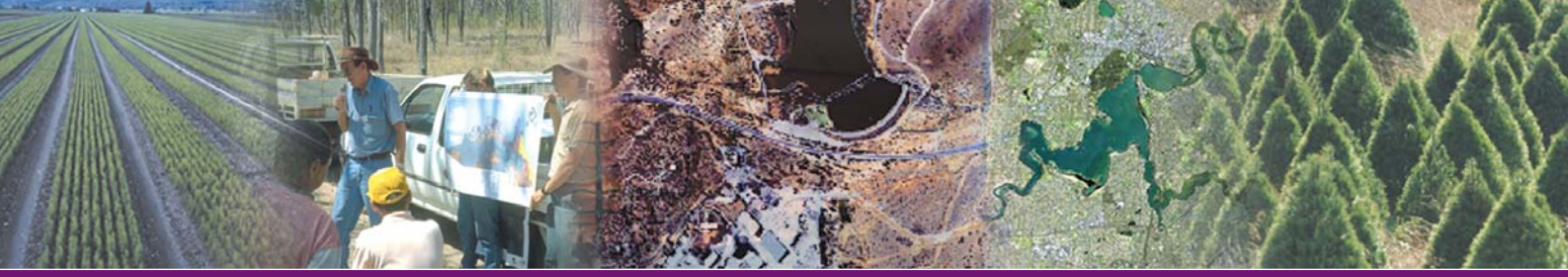
REGISTRATION BROCHURE



Invitation from the Chairman

On behalf of the Organising Committee I invite you to participate in the 12th Australasian Remote Sensing and Photogrammetry Conference in Fremantle.

Inspired by a recent MODIS image of the Queensland floods, a meteorologist felt compelled to write that "the image . . . reminds us of the incredible capabilities of satellites in this day and age. And we're only seeing the tip of the iceberg". Hence it is no accident that our theme "To Measure is to Manage" reflects the increasing array of remote sensing and photogrammetric techniques being deployed to better explore or manage the resources of our world. These complex spatial measurement techniques are increasingly deployed for diverse applications that range from conventional topographic and geologic mapping through to precision agriculture, environmental monitoring and numerical weather forecasting. This is especially important in Western Australia, which is large, remote, resource-rich, environmentally sensitive and often inaccessible. As a consequence, remote sensing is increasingly being developed and used as a critical measuring and monitoring tool by industry and government in this state.

Consequently, we are seeking to organise a conference that promotes the interplay between a diversity of sensor systems (old and new) and the wider fields of science that creates new applications across a range of disciplines. This diversity is reflected in the industry groups, resource managers, government agencies, academics and scientists who we hope will attend and participate.

Therefore we have organised a format for the Conference that enables all groups to participate through exhibits, formal plenary and concurrent sessions, pre/post Conference workshops, special mid-Conference meetings and poster presentations. In addition, we have a social program to promote networking across the range of persons interested in both measurement techniques and their applications.

Your contribution to the Conference as a presenter (posters and papers), interactive session coordinator, sponsor, exhibitor, data supplier, end user or interested observer is encouraged, and we look forward to seeing you in Fremantle in October 2004 for an exciting time.

Richard Smith
Chairman of the Organising Committee

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Sponsors

The generous support of our Conference sponsors is greatly appreciated.

Organising Committee

Chairman

- Richard Smith, *Department of Land Information, Western Australia*

Committee Members

- Bob Agar, *Australian Geological and Remote Sensing Services*
- Max Bye, *GeoImage*
- Tom Cudahy, *CSIRO*
- Ken Dawbin, *Department of Land Information, Western Australia*
- Peter Hausknecht, *HyVista Corporation*
- Rob Hewson, *CSIRO*
- Mike Hussey, *De Beers Australia Exploration*
- Derek Lichti, *Curtin University of Technology*
- Cindy Ong, *CSIRO*
- Robert Shaw, *Department of Land Information, Western Australia*

Web Site

- Adrian Allen, Department of Land Information, Western Australia

Venue and Date

The Australasian Remote Sensing and Photogrammetry Commission of the Spatial Sciences Institute will host the 12th Australasian Remote Sensing and Photogrammetry Conference from Monday 18 to Friday 22 October 2004. The Conference will be held at the Esplanade Hotel Fremantle, corner Marine Terrace and Essex Street, Fremantle.

The four star international Esplanade Hotel Fremantle is located in the heart of the historic City of Fremantle. The hotel was originally a merchant building for wine and auctioneering, owned by Phillip Webster in 1881. Its facade has heritage importance.

The Conference will commence on Monday 18 October with pre-Conference workshops, continuing with the official opening, launch of the Exhibition and the Welcome Reception on Monday evening. Paper and poster sessions will commence from 8.30am on Tuesday 19 October and will conclude at 5.00pm on Friday 22 October.

Fremantle—Host City

The port city Fremantle is situated just 20 minutes from Perth. It is a great tourist destination with a rich maritime and cultural heritage. Today, much of the colonial architecture remains, which makes Fremantle a beautiful and historic city. Situated on the popular and busy Fremantle Port where the Swan River meets the Indian Ocean, Fremantle enjoys a Mediterranean climate. Fremantle boasts some of the finest shopping, dining, recreational and leisure facilities in Australia. Visit its many museums or stroll through the Cappuccino Strip—or simply enjoy the bustle and hustle of the "Freo" Markets or the Fishing Boat Harbour where the maritime atmosphere of the city can be best appreciated.

Websites of Interest

Information on events, food and dining, news, maps and general information on Fremantle and Western Australia:

http://www.fremantle.wa.gov.au

http://www.countrywide.com.au/fremantle/

Conference website: **www.rss.dola.wa.gov.au/12arspc**

Plenary Speakers

Tim Danaher

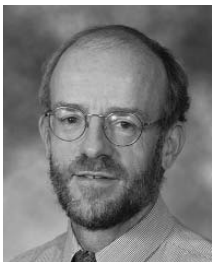
Tim Danaher is a principal scientist with the Queensland Department of Natural Resources, Mines and Energy and is the team leader for the Statewide Landcover and Trees Study (SLATS). SLATS commenced in 1995 to provide information on vegetation clearing rates and mapping of vegetation cover over the entire state for policy, planning and compliance purposes. Tim played a primary role in the establishment of the SLATS program, including major input to its conceptualisation and development. He continues to coordinate and manage the operational SLATS monitoring system as well as to drive a research team in developing improved data analysis techniques. His chief research focus is the calibration and radiometric correction of Landsat imagery to enable the development of calibrated relationships between field measurements and imagery.

Previously Tim worked for the Department of Primary Industries as part of the team that developed the spatial modelling framework for the Queensland's drought monitoring system. This system has since evolved into the national AussieGRASS system. Since 1985 his career has focussed on developing remote sensing applications within the Queensland Government. Prior to this, Tim worked in the private sector with consulting surveyors. Tim holds a Bachelor of Surveying (Hons) degree.

Stefan Dech

Professor Stefan Dech received his Ph.D. in geography, with specialisation in remote sensing in the geosciences, from the Julius Maximilian University in Würzburg, Germany, in 1990. He has directed DFD, the German Remote Sensing Data Centre of DLR, since 1998 and has been Professor for Remote Sensing (endowed chair) at the Geographical Institute of the University of Heidelberg since 2001. Between 1999 and 2003 he was elected representative of the directors of DLR institutes to the Scientific-Technical Council of DLR for the area of earth observation methodology and instruments.

Professor Dech's professional experience was gathered at DLR. Research emphases after his doctorate were on developing information products from AVHRR and GOME data and on operationalising algorithms and processes for vegetation indices and associated parameters, sea and land surface temperatures, ozone maps and derived products.



Tim Griffin

Tim completed a Bachelor of Science (Hons) in geology at the Australian National University and obtained his PhD from James Cook University in 1976. He worked for the Papua New Guinea Geological Survey for three years before joining the Geological Survey of Western Australia in 1980.

Throughout his career Tim has focused on regional mapping and the application of aerial and satellite imagery to improve the interpretation of ground information. This work has ranged from mapping annual changes in river systems in PNG and identifying the different weathered but undisturbed lava flows in North Queensland, to mapping thrusted terrains in Tertiary rocks in PNG, Early Proterozoic rocks in the Kimberley, and Archaean greenstone sequences in Eastern Goldfields.

As a senior manager, Tim has been closely involved in introducing new technology in remote sensing and photogrammetry to geological mapping in WA. He played a key role in the project to acquire the first complete Landsat coverage of WA, and played an instrumental role in a topographic mapping program using SPOT imagery over a region in central WA equal to the area of Victoria.

Tim is the current Director of the Geological Survey of Western Australia and, amongst other roles, represents the Department of Industry and Resources on the WALIS Executive Policy Committee.

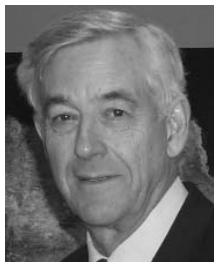
Bruce Hobbs

Dr Hobbs was appointed Chief Scientist of Western Australia and Executive Officer of the Office of Science and Innovation at the Department of the Premier and Cabinet in 2003. He had a lengthy career at CSIRO, joining the organisation in 1984 as Chief Research Scientist. After several promotions, in February 2000, he was appointed Deputy Chief Executive of Minerals and Energy at CSIRO.

Dr Hobbs has also made a distinguished academic career in Australia and the United States, including a position as Foundation Professor of Earth Sciences at Monash University. In 1978 and 1980 Dr Hobbs was Visiting Professor at the University of California and at Brown University in Providence, USA. He held research positions and lectured at the University of Sydney in the Geology Department from 1959 to 1967. In 1971, Dr Hobbs held the position of the Professor of Structural Geology at the State University of New York. He holds a Doctor of Philosophy in Geology (1962) from the University of Sydney.

His prizes and awards include the John Jaeger Medal for Science (2001), Senior Fulbright Award (1979), United States Antarctic Research Program Medal (1970) and Junior Fulbright Award (1966). Dr Hobbs is a Fellow of the Australian Academy of Science.

Dr Hobbs' work in the past decade has centred around developing computer applications that simulate mechanical behaviour, fluid flow, heat flow and chemical reactions governing ore body formation. The goal is to produce a predictive modelling capability that enhances our ability to discover new ore bodies.



John Trinder

John Trinder is a graduate of the University of New South Wales (UNSW) in Sydney, Australia and ITC in The Netherlands. He has worked at the University of NSW since 1965, progressing to the position of Professor in 1991 and Head of the School. He is currently Emeritus Professor. John has undertaken teaching and research at UNSW, specialising in Photogrammetry and Remote Sensing, and has published more than 130 scientific papers in journals and conference proceedings. He has held a number of positions in the Council of the International Society for Photogrammetry and Remote Sensing (ISPRS), including Treasurer 1992–1996, Secretary General 1996–2000 and is currently President for the period 2000–2004.

Susan Ustin

Susan Ustin is a Professor in the Department of Land, Air and Water Resources at the University of California Davis and serves as Director of the California Space Institute Center of Excellence at UC Davis, the Center for Spatial Analysis and Remote Sensing (CSTARS), and Department of Energy's Western Regional Center for Global Environmental Change (WESTGEC). Her research has focused on developing and testing methods for retrieving environmental information from remote sensing imagery at spatial scales from microscopic to regional (e.g. watershed) and encompasses both theoretical and applied research. She has studied many different ecological communities around the world.

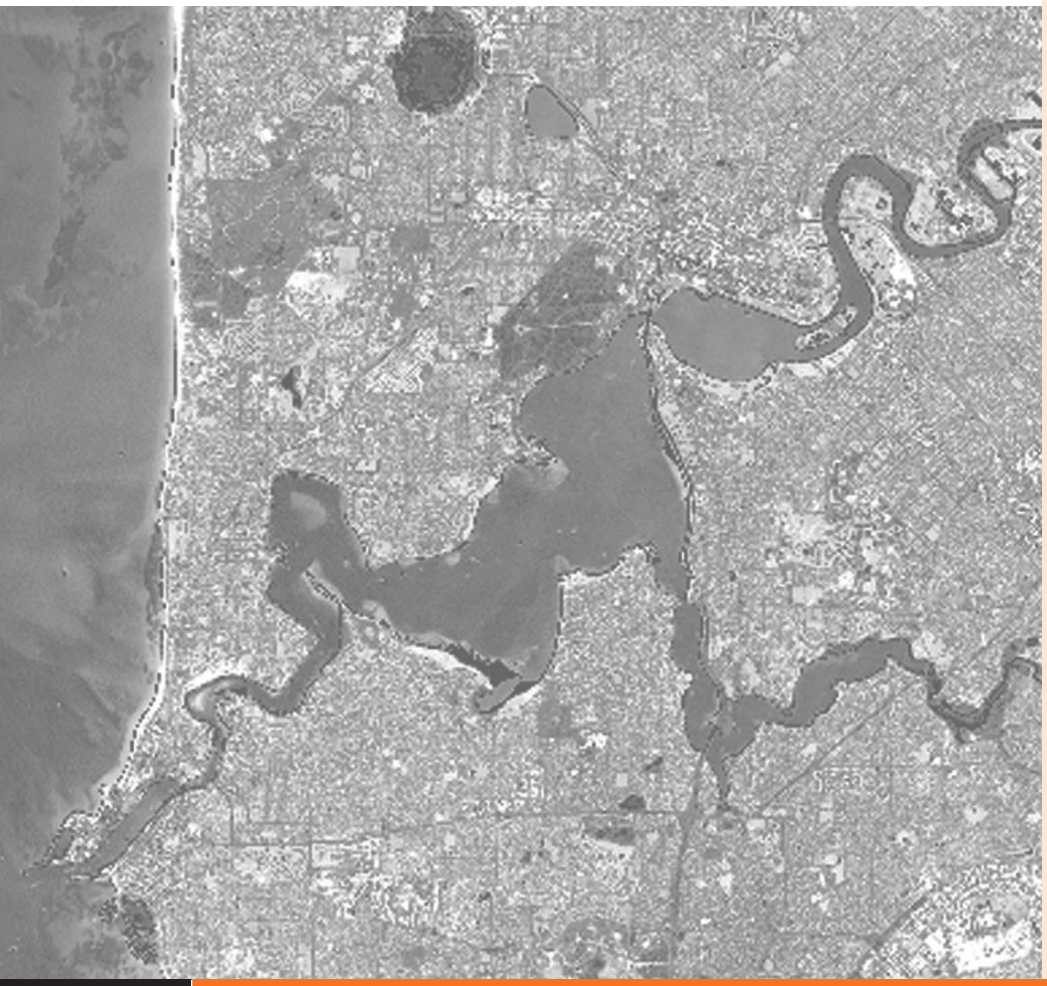
Plenary Speakers

Peter Woodgate

Peter has over 20 years' professional and academic experience in a range of disciplines spanning the pure and life sciences, engineering, business, public policy and administration. These contributions have driven significant changes in land allocation, landscape management and resource policy at the Commonwealth and State and Territory level, and have strongly influenced government training, education and R&D investments in sustainable resource management.

Yasushi Yamaguchi

Yasushi Yamaguchi is Professor at Department of Earth and Planetary Sciences, Graduate School of Environmental Studies, Nagoya University, Japan. He received the D.Sc. degree in Geologic Remote Sensing in 1989 from Tohoku University. Prior to joining Nagoya University in 1996, he spent 16 years at the Geological Survey of Japan. He was a Visiting Scientist at Stanford University, USA, from 1984 to 1986. Currently, he is the Japanese ASTER Science Team Leader.



Session Head Speakers

Richard Baumeister
Boeing, USA

Janice Bishop
Icarus (International Journal of Solar System Studies) and NASA-Ames Research Center, California, USA

Stephane Chevrel
Bureau of Geological and Mining Research (BRGM), France

Terry Cocks
HyVista Corporation

Kenneth Duda
NASA Land Processes Distributed Active Archive Center, USGS/EROS Data Center, USA

Clive Fraser
Department of Geomatics, University of Melbourne

Mike Hussey
De Beers Australia Exploration Limited (formerly Stockdale Prospecting Ltd)

Chris Justice
Geography Department, University of Maryland, USA

Kazuya Okada
Sumitomo Metal Mining Company Ltd, Tokyo, Japan

Gary Richards
Australia's National Carbon Accounting System (NCAS), Visiting Fellow at the Australian National University

Friday 22 October

Room		Orion/Pleiades		Rottnest		Carnac
		Chairman: Richard Smith				
08.30-09.00		**Plenary Keynote Speaker:** Tim Danaher - Evolution of Queensland's Statewide Monitoring System for Vegetation Management				
Concurrent sessions		**ASTER Processing & Calibration**		**Water**		**Multi-spectral and Time Series Measurement**
		Chairman: Dan Taranik		**Chairman: Megan Lewis**		**Chairman: Alex Held**
09.00-09.15	F.A.1	**Session Keynote Speaker:** Pendock, N - Correcting ASTER SWIR Imagery for Crosstalk Noise	F.B.1	Shaw, JK - Mapping Hydrodynamic Processes on Coral Reefs Using Landsat 7	F.C.1.	Campbell, SK - CSIRO Earth Observation Centre: Radiometric Calibration Facility
09.15-09.30	F.A.2	Continued	F.B.2	Donaldson, B - Examination of Bottlenose Dolphin Behavioural and Ecological Relationships Using Digital Aerial Photography, Remote Sensing and Geographic Information Systems	F.C.2.	Mitchell, RM - A2D2 - An Australian Aerosol Dataset for Climate Change and Remote Sensing Applications
09.30-09.45	F.A.3	Handcock, RN - Accuracy Issues of Thermal-infrared Remote Sensing of Stream Temperatures at Multiple Spatial Scales	F.B.3	Tripathi, N - Monitoring Changes in Coral Reef and Other Benthic Habitats using Remote Sensing data and GIS	F.C.3.	King, Schmidt and McVicar - Linux Cluster for Time Series Processing
09.45-10.00	F.A.4	Buchanan, A - Atmospheric Correction of ASTER Visible Bands Data Using MODIS DAAC Data	F.B.4	Kobryn, HT - Integration of Remotely Sensed Data and Bathymetric Information for Marine Habitat Classification in the Abrolhos Islands, Western Australia	F.C.4.	Schmidt, M - Web-CATS: An Internet-based Delivery System for the CSIRO AVHRR Time Series (CATS) Dataset of the Australian Region
10.00-10.15	F.A.5	Mars, J - Calibration of ASTER using MODIS	F.B.5	Fearns, P - Remote Sensing in SW Western Australian Waters	F.C.5.	
10.15-10.30	F.A.6	Gillespie, A (presenter R Handcock) - A Reliability of ASTER Emissivity Images	F.B.6	Klonowski, W - Bottom Type Classification Using Hperspectral Remotely Sensed Data	F.C.6	
10.30-11.00		**Morning Tea**				
Concurrent sessions		**SAR Imaging**		**General and Hyperspectral Remote Sensing**		**Precision Farming Delivery Systems**
		Chairman: Ian Tapley		**Chairman: Helena Kobryn**		**Chairman: Jim Dixon**
11.00-11.15	F.A.7	Tapley, I - Geographic Synthetic Aperture Radar (GeoSAR) - New Generation Radar System Suitbale for Geoscience Applications in the Asia-Pacific Region	F.B.7	Carroll, D - A Study of the Positional Accuracy of Orthorectified SPOT 5 - 2.5m Imagery	F.C.7.	Stovold, R - Processing and Internet Delivery of Pasture and Crop Information to Farmers and Agribusiness Consultants
11.15-11.30	F.A.8	Stacy, NJ - Analysis of Ingara Fully Polarimetric X-Band SAR Imagery of Australian Terrain	F.B.8	Anderton, L - DigitalGlobe Products (No Abstract)	F.C.8.	Gherardi, S - Pastures from Space - The Value to Australian Sheep Producers of Satellite-Based Pasture Information
11.30-11.45	F.A.9	Crisp, DJ - Ship Detection from SAR	F.B.9	Wu, X - An Approach for Terrain Illumination Correction	F.C.9.	Maling, I - From Satellites to Seeders: Delivering Satellite-based Spatial Solutions to Growers
11.45-12.00	F.A.10	Bell, D - Research and Commercial Applications of DSTO Ingara SAR	F.B.10	Bhaskaran, S - Evaluation and Assessment of Airborne and Spaceborne Hyperspectral data for Mapping Urban Surfaces	F.C.10	Donald,G - Advantages of TERRA MODIS Imagery over AVHRR to Quantitatively Estimate Pasture Growth Rate in the South West Region of Western Australia
12.00-12.15	F.A.11	Bell, D - Determination of Mean Low Water Mark using Synthetic Aperture Radar	F.B.11	Yu, FL - Applying Linear Regularisation to the Remote Sensing of Bi-directional Reflectance and Atmospheric Aerosol Optical Depth	F.C.11	Barker, T - The Economics of Spatial Imagery within the Queensland Government
12.15-12.30	F.A.12	Rosenqvist, A - Australian Contributions to the ALOS Kyoto & Carbon Initiative	F.B.12	Kazemi, S (presenter Ge) - Is Automated Generalization There Yet?	F.C.12	
Room		**Orion/Pleiades**				
12.30-13.00		**Chairman: Chris Bellman**				
		Plenary Keynote Speaker: Peter Woodgate - To Measure Is to Manage - What Has Been Achieved by the Conference?				
13.00-13.15		***Official closing of Conference***				
13.15-14.10		**Lunch - no catering**				
		Workshops				

Room	Orion/Pleiades	Rottnest	Carnac	Curtin University
	14.10-17.00 WA Regional SSI Seminar	**13.30-17.00** Workshop 1 - Thermal Infrared Spectral Sensing - Principles, Processing, Instruments and Applications	**14.00-17.00** Workshop 9 - Leica Photogrammetry Suite - Photogrammetry and Image Processing Come Together	**14.00-17.30** Workshop 3 - Introduction of Aster and Its Processing (Continued) - Rob Hewson, CSIRO **13.30** Coach transfers depart from Esplanade to Curtin University **17.40** Coach transfers depart from Curtin University to Esplanade